

# **Where is the Line? The Effect of Narrowed Scope of Discontinued Operations on Earnings Quality and Analysts' Forecasts**

## **Abstract**

In the past decades, the U.S. accounting standards have been trending toward more narrowed scope for the “below-the-line” items. This study examines whether the quality of “above-the-line” (or core) earnings and analysts’ forecasts is affected by the recent major rule change in this regard (i.e., ASU2014-8), which imposes much more stringent criteria for classifying dispositions as below-the-line items (i.e., discontinued operations). Using data surrounding this rule change, we find that the frequency of reported discontinued operations significantly reduces after the change, suggesting underlying dispositions being buried in the core earnings. More importantly, we find that the persistence and response coefficient of core earnings significantly reduce and that analysts’ forecast error and dispersion increase. Thus, the narrowed scope of below-the-line items required by ASU 2014-8 introduces significant noise to core earnings and increases information asymmetry and uncertainty between managers and financial analysts. Our findings should be of interest to accounting regulators, firm managers, analysts, and investors when they interpret both above- and below-the-line items.

# Where is the Line? The Effect of Narrowed Scope of Discontinued Operations on Earnings Quality and Analysts' Forecasts

## 1. Introduction

In the past decades, the U.S. accounting standards have gradually shifted many “below-the-line” items in income statement into “above-the-line” (or core earnings). For instance, the Financial Accounting Standard Board (FASB) eliminated reporting i) the cumulative effects of changes in accounting principles in 2005 and ii) extraordinary items in 2015. A recent rule change that has broad implications for firms is the Accounting Standard Update (ASU) 2014-8, which narrows the scope of discontinued operations (DO). This study examines whether this rule change affects the quality of core earnings, as measured by persistence and earnings response coefficients, and analyst forecast attributes, as measured by forecast error and dispersion.

In principle, allowing firms to report broader below-the-line items gives managers more opportunities to signal the more permanent component of performance through accounting classification, potentially making the core earnings more persistent. On the other hand, under the earnings management hypothesis, managers may exercise their discretion to report opportunistically due to agency problems, leading to less persistent core earnings.<sup>1</sup> As a practical matter, distinguishing between managerial intents has been difficult for users of financial statements, and preparers are often concerned about the financial reporting risks associated with applying the rules.

The scope of DO has been a highly controversial subject of heated debate among users, preparers, auditors, and standard setters for years, and has triggered several changes in U.S. accounting standards over the last two decades. In 2014, the FASB released ASU 2014-8 to replace Statement of Financial Accounting Standards (SFAS) 144, which in turn replaced Accounting Principles Board (APB) 30 in 2002. The new

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<sup>1</sup> Under earnings management through classification shifting, less persistent earnings can be driven by the biased asymmetric classification of transitory disposals. To see this, assume that a firm earns \$100 core earnings in both years  $t$  and  $t+1$ . In addition, in year  $t$ , it earns \$10 from disposition of component A and -\$10 from disposition of component B, while in year  $t+1$  it earns \$0 from disposition. Without earnings management, it reports \$100 core earnings for both year  $t$  and year  $t+1$ . Due to earnings management to increase core earnings (Barua et al. 2010), however, it reports \$110 in year  $t$  and 100 in year  $t+1$ , which lowers earnings persistence.

rules in ASU2014-8 require that a DO represent a “strategic shift that has (or will have) a major effect on an entity’s operations and financial results.” Although ASU 2014-08 does not clearly define “strategic shift that has major” effects, it provides examples such as the dispositions of a line of business or a significant geographic area.

In contrast to the “strategic and segment” approach under ASU 2014-8, the previous rule SFAS 144 follows a “component” approach, which defines broader scope of DO by including less significant dispositions. As defined in SFAS 144, a component of a reporting entity could comprise of “operations and cash flows that can clearly be distinguished, operationally and for financial reporting purposes, from the rest of the entity.” As a result, a disposal or termination of a production line, a group of assets, a line of business, a subsidiary etc. may qualify for DO. Thus, the scope of DO under ASU 2014-8 is widely believed to be more narrowed compared with SFAS 144.<sup>2</sup>

Because a disposition can be classified either below- or above-the-line, the scope of DO should have important implications for core earnings. However, there has been very limited research on this particular issue. The existing studies tend to focus on the informativeness of DO and provide somewhat mixed results. For example, Herrmann, Inoue, and Thomas (2000) and Lin (2002) find that analysts use the information contained in DO when forecasting firms’ future earnings, while Fairfield, Sweeney, and Yohn (1996) find that DO do not improve predictions of future earnings. More recently, Ji, Potepa, and Rosenbaum (2018) find that DO under ASU 2014-8 are not associated with future earnings. Note that these studies focus on the association between DO and future earnings (or forecasted future earnings), but not the persistence of core earnings conditional on reporting DO.

To the best of our knowledge, Curtis, McVay, and Wolfe (2014) is the only study that has examined the implication of change in the scopes of DO on core earnings persistence. Curtis et al. (2014) focuses on

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<sup>2</sup> ASU2014-8 is more in line with that of APB 30, which required that only dispositions of business segments qualify as DO. International Financial Reporting Standards (IFRS) 5 defines a DO as “a component of an enterprise that represents a separate major line of business or geographical area of operations, and is part of a single, coordinated plan to dispose of this separate major line of business or geographical area of operations, or is a subsidiary acquired exclusively with a view to resale”. Thus, IFRS 5 is generally more in line with APB 30.

the effect of the rule change to SFAS 144 from APB 30 (i.e., a switch to the component approach from the business segment approach). They provide evidence that the broader scope of DO under SFAS 144 increases core earnings persistence, consistent with the managerial signaling hypothesis. However, Curtis et al. (2014) do not examine the impact of SFAS 144 on analysts' forecast attributes. Therefore, it is not clear if these changes have any real impact on the decision making of relatively sophisticated users of financial statements.

Another line of research related to DO is identifying managerial reporting opportunism, which also generates somewhat mixed empirical results. Barua, Lin, and Sbaraglia (2010) find that the rule change to a broader scope (i.e., from APB 30 to SFAS 144) reduces earnings management (through classification shifting), but Ji et al. (2018) find that the more recent rule change to a narrower scope (i.e., from SFAS 144 to ASU 2014-8) does not affect such earnings management.

We develop testable predictions to investigate whether a switch to the strategic and business segment approach under ASU 2014-8 from the component approach under the SFAS 144 affects (1) the frequency of reporting DO, (2) analysts' forecast attributes associated with reporting DO, measured by forecast error and dispersion, and (3) persistence and market response coefficient of core earnings.

We predict that the frequency of reporting DO should significantly decrease following ASU 2014-8 given that the new rule adopts a narrower scope DO compared with SFAS 144. Under either the signaling or earnings management hypothesis, the previous broader scope of DO in SFAS144 allows managers to classify more non-strategic, one-time transitory disposals as below-the-line to either signal the higher core earnings persistence (Curtis et al. 2014) or to manage the core earnings upward (Barua et al. 2010). Under ASU2014-8, however, managers are not allowed to classify these non-strategic disposals as DO.<sup>3</sup>

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<sup>3</sup> Two changes may offset any reduced frequency in reporting DO. First, ASU 2014-08 allows for greater continuing involvement with the disposed components than was previously allowed. (Under SFAS 144, companies were restricted from applying discontinued operations treatment to disposals in which the company continued to have significant involvement (i.e., outsourcing). Second, SFAS 144 did not allow the sale of equity investments to qualify for treatment as discontinued operations but ASU 2014-08 reverses this.

We, however, make no directional prediction regarding the change in earnings persistence following ASU 2014-8 because the signaling and earnings management hypotheses predict contrary results. If managers previously include more non-strategic transitory disposals in DO under SFAS 144 to signal more permanent core earnings, we predict less persistent core earnings under ASU 2014-8. However, if managers previously include more negative non-strategic transitory disposals in DO under SFAS 144 to manage core earnings upward (Barua et al. 2010), absence of this biased classification would generate higher persistent core earnings under ASU 2014-8 (as the accounting treatments for both positive and negative non-strategic disposals are symmetric).

We also predict no directional prediction regarding the change in analysts' forecast error and dispersion following ASU 2014-8. Because security analysts typically forecast core earnings, the classification of DO likely influence their forecast attributes. As discussed above, the signaling and earnings management hypotheses predict contrary results. The narrowed scope under ASU 2014-8 may reduce the signaling effects, which in turn makes it more difficult for analysts to forecast earnings.<sup>4</sup> Alternatively, the narrowed scope may remove the biased classification originated from managers' agency problem, which in turn also makes it less complicated for analysts to forecast earnings, because analysts just need to focus on economic fundamentals without being concerned with related classification bias. The newly expanded disclosures about the strategic disposals under ASU 2014-8 also may make analysts' forecast task easier, which are not required under SFAS 144.

We test our predictions using a sample of firms between 2012 and 2016. Consistent with our prediction, we find that the frequency of reporting DO significantly decreases following ASU 2014-8. We also find that the rule change reduces core earnings persistence and core earnings response coefficient, indicating that requiring major strategic shift of DO introduces noise (i.e., non-strategic transitory disposals) in core earnings. Additional tests show that those unreported dispositions of components are not taken to special items to manage earnings following ASU 2014-8. Finally, we find that the rule change increases the

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<sup>4</sup> Another reasons that forecasting may become more difficult is that analysts are more uncertain about whether disposals are viewed by managers as major strategic shifts.

association between reported DO and analysts' absolute forecast error and dispersion, which indicating that a narrower scope of DO increases the difficulty for analysts to forecast core earnings. Additional analyses show that the rule change increases the association between reported DO and analyst optimism, confirming the notion that the additional noise in core earnings (i.e., negative non-strategic disposals) leads to larger forecast error. Taken together, our evidence is more consistent with the signaling hypothesis that the narrower scope of DO following ASU 2014-8 reduces managerial signaling through excluding non-strategic disposals from core earnings, which decreases earnings quality and makes it more difficult for users to forecast firm performance.

This study provides empirical evidence to demonstrate the important role of the scope of DO in determining firms' earnings quality and market participants' earnings expectation. DO are separately reported below-the-line, which may be ignored by the users of financial information. Thus, prior studies mainly focus on understanding the noise in DO (Barua et al. 2010; Ji et al. 2018) and testing whether DO are informative about future earnings (Fairfield et al. 1996; Herrmann et al. 2000; Lin 2002; Ji et al. 2018). However, the classification of below-the-line items affects above-the-line earnings, which are closely followed by market participants. This study provides evidence consistent with the hypothesis that narrowing the scope of DO by ASU 2014-8 has significantly limited the opportunities for managers to signal the more persistent components of firm performance to market participants. We find less persistent core earnings after ASU 2014-8 and that security analysts' forecast error and dispersion associated with DO also become larger, indicating that the rule change significantly increases the information asymmetry and uncertainty between managers and financial analysts.

The remainder of this paper is organized as follows: Section 2 reviews the relevant literature. Section 3 develops testable predictions. Section 4 describes data and the research design. Section 5 provides the results, and Section 6 concludes this study.

## 2. Literature review

Accounting classification in income statement allows managers to report income items based on their function,<sup>5</sup> which separates recurring (or operating) income items from non-recurring (or non-operating) income items. This reporting discretion allows users of financial statements to more easily evaluate firm performance. In particular, managers can use accounting classification to signal their inside information about firms' core earnings that is important for firms' fundamental value. However, managers have the incentives to exercise their discretion over accounting classification to manipulate core earnings upward and increase firm value (e.g., Bradshaw and Sloan 2002; McVay 2006; Barua et al. 2010). Hence, accounting misclassification could trigger mispricing because of the information asymmetry between managers and investors about firms' earnings prospects (e.g., McVay 2006; Alfonso, Chen, and Pan 2015). SEC clearly states the importance of accounting classification that "[t]he appropriate classification of amounts within the income statement is as important as the appropriate measurement or recognition of such amounts" (SEC 2000).

The scope of DO is a highly controversial issue for several reasons. First, dispositions that are classified as DO are reported below the line, while other dispositions are reported above the line. In other words, the scope of DO affects core earnings and firm value. Moreover, managers exercise their discretion over which dispositions are classified as DO because it is hard to detect the intent of managers about which dispositions are reported as DO. Finally, accounting regulators have been shifting between different scopes of DO over the last two decades. For example, the 'segment' approach was used in APB 30 to report segment dispositions as DO, while the 'component' approach was used in SFAS 144 that reports any component dispositions as DO. In 2014, it was shifted to the 'strategy and segment' approach in ASU 2014-8 that reports strategic dispositions as DO and reports non-strategic dispositions above the line.

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<sup>5</sup> Although US GAAP does not require a specific format for the income statement, majority of U.S. firms uses the multiple-step income statement, which report their line items based on their function instead of their nature. The multiple-step income statement is believed to be more informative because it does not only separate operating income from non-operating income but also reports different levels of profitability, namely, gross profit, operating income, income from continuing operation, and net income.

Prior research examines and finds that managers use DO to manage core earnings through classification shifting (McVay 2006; Barua et al., 2010). Evidence on how DO affect market participants' perception about firms' earnings prospects is limited and mixed. Using Japanese data, Herrmann et al. (2000) find that disaggregated earnings components reported on the face of income statement including discontinued operations help improve earnings forecast accuracy. Using UK data, Lin (2002) investigates whether earnings components reported on the face of income statement following a new reporting financial performance standard in the UK (i.e., FRS 3) affect analysts' current and future earnings forecasts. He finds that DO is generally considered by analysts when producing current and future earnings forecasts.<sup>6</sup> Fairfield et al. (2006) examine whether accounting classification (i.e., earnings components as reported on the face of income statement) helps predict future profitability (i.e., ROE). They find that DO and extraordinary items do not have a significant effect on the predictive content of reported earnings while special items do. Overall, prior research has provided mixed results regarding the predictive value of reported DO for future earnings.

A concurrent work by Ji et al. (2018) examines the effect of change in the scope of DO following a regulation change from SFAS 144 to ASU 2014-8. Inconsistent with Barua et al. (2010), they find no evidence of earnings management through classification shifting following ASU 2014-8. They also find that DO under ASU 2014-8 does not seem to predict future earnings. Their study does not examine changes in earnings quality and market participants' perception about future earnings following the new regulation. These are important issues because ASU 2014-8 could significantly increase information asymmetry and uncertainty between managers and market participants and adversely affect firms' earnings quality and analysts' forecast attributes. Curtis et al. (2014) is the only study that examine whether change in the scope of DO following a regulation change from APB 30 to SFAS 144 affects earnings persistence. They find

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<sup>6</sup> The reporting location of DO is different between SFAS 144 (U.S.) and FRS 3 (U.K.). FRS 3 required firms to report income from DO as part of operating income while disposal gains or losses from DO were reported as part of super exceptional items that are reported below the operating income. SFAS 144 required the net amount of both income from discontinued operation and disposal gains or losses is reported below the income from continuing operations.



that continuing income became more persistent among firms reporting DO in the post SFAS 144 period, which supports the notion that the broader scope of DO helps better identify continuing income. However, their study also does not examine the extent to which DO under ASU 2014-8 affect market participants' perception about firms' earnings quality.

Taken together, previous studies provide somewhat mixed evidence on whether DO are informative in predicting future earnings. Recent research, however, suggests that the broader scope of DO (such as the scope used by SFAS 144) improves earnings persistence. In this study, we examine the effect of change in the scopes of DO following a switch to ASU 2014-8 from SFAS 144 on earnings quality, as measured by earnings persistence and earnings corresponding coefficient, and analysts' forecast attributes, as measured by analyst forecast error and dispersion. We develop the testable predictions in the next section.

### **3. Empirical Predictions**

SFAS 144 follows the component approach that broadly defines DO as disposal or termination of a component of a firm that “comprises operations and cash flows that can clearly be distinguished, operationally and for financial reporting purposes” from the rest of the firm. In contrast, the new ASU 2014-8 adopts the strategic and segment approach that narrowly defines discontinued operation as disposal or termination of a firm's operation that represents “strategic shift that has (or will have) a major effect on an entity's operations and financial results”.

Since the scope for DO under ASU 2014-8 is believed to be narrower compared with SFAS 144, we predict that firms are less likely to report DO following ASU 2014-8 when holding the underlying disposal activities constant. This prediction is likely to hold under both the managerial signaling and earnings management hypotheses, because the managerial reporting choices have become more limited irrespective of managerial incentives. We formally state the following prediction (in alternative form):

*H1: A change to the narrower scope of discontinued operations (ASU 2014-8) from the broader scope of discontinued operations (SFAS 144) leads to lower frequency of reporting discontinued operations.*

Our second set of predictions focus on the effect of changing to a narrower scope of reporting DO on earnings persistence under alternative managerial reporting incentives. Allowing firms to report broader below-the-line items gives managers more opportunities to signal the permanent components of performance through accounting classification. For instance, a firm earns a loss from non-strategic one-time disposal in year  $t$ , which will not occur in year  $t+1$ . Under the managerial signaling hypothesis, this loss would be reported as DO under SFAS 144, which makes the core earnings more persistent. Under ASU 2014-8, however, this loss will be included in the core earnings, which makes the reported core earnings less persistent. Thus, if managers previously include non-strategic transitory disposals in DO under SFAS 144 to signal more permanent core earnings, we predict less persistent core earnings under ASU 2014-8 which limits managerial signaling.

On the other hand, under the managerial incentives to manage core earnings upward, the reported core earnings may become less persistent. For instance, a firm earns \$10 from non-strategic disposal of component A and -\$10 from non-strategic disposal of component B in year  $t$ , which will not occur in year  $t+1$  (i.e., both are transitory items). To manage core earnings upward, the management classifies the disposal gain of \$10 as core earnings but the disposal loss of -\$10 as DO under SFAS 144. This classification bias would lower the persistence of core earnings when the underlying transitory items would otherwise cancel out in one period in the absence of earnings management.

Due to the above contrary hypotheses, we make no directional prediction regarding core earnings persistence following ASU 2014-8. Empirically, we focus on two observable attributes of core earnings, namely, i) temporal associations of core earnings (i.e., “earnings persistence”) and ii) change in stock price per unit of shock in core earnings (i.e., “earnings response coefficient”), as prior studies show that the earnings response coefficient is positively related to persistence (e.g., Collins and Kothari 1989). The predictions are formally stated as the following (in null form):

*H2a: A change to a narrower scope of discontinued operations (ASU 2014-8) from a broader scope of discontinued operations (SFAS 144) does not affect core earnings persistence.*

*H2b: A change to a narrower scope of discontinued operations (ASU 2014-8) from a broader scope of discontinued operations (SFAS 144) does not affect earnings response coefficient.*

Our third set of predictions relate the change in the scope of DO to analysts' forecast error and dispersion. As we argued earlier, the change in the scope of DO may increase or decrease core earnings persistence. Therefore, such changes in core earnings persistence may in turn affect analysts' forecast error and dispersion, because analysts tend to focus on core earnings when forecasting. In general, the forecast task should be easier (more difficult) for analysts when core earnings are more (less) persistent, leading to lower (higher) forecast error and dispersion.

Note that one important requirement by ASU 2014-8 is the management's intention of major strategic shifts. Even if analysts can anticipate disposal costs (related to fixed assets, employees, etc.), they may not know the managerial intent regarding whether such exits represent major strategic shifts. Therefore, if management intention creates additional uncertainty, analyst forecast error and dispersion should be higher for firms with large reported DO.

Another important aspect of ASU 2014-8 is the requirement of the related additional disclosures regarding DO. The new rule requires expanded disclosures for DO, including more details about earnings and balance sheet accounts, total operating and investing cash flows, and cash flows resulting from continuing involvement.<sup>7</sup> New disclosures are also required for disposals of individually significant components that do not qualify as discontinued operations.<sup>8</sup> These additional disclosures may mitigate the uncertainty among analysts. Taken together, we make the following non-directional predictions (in the null form):

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<sup>7</sup> Comparing with SFAS 144, the new rule permits continued involvement for items being classified as DO. For example, a firm has been outsourcing its manufacturing process to a third party but decides to terminate this process as a major strategic shift. The costs associated with transferring or disposing of related equipment, employees, and other assets may qualify for DO under ASU 2014-8, but not under SFAS 144 due to its continued involvement with the third party.

<sup>8</sup> We investigate some sample firms and find that firms do not seem to disclose any significant component dispositions. However, additional disclosure of significant component dispositions should work against our results reported in this study.

*H3a: A change to the narrower scope of discontinued operations (ASU 2014-8) from the broader scope of discontinued operations (SFAS 144) does not affect analyst forecast error.*

*H3b: A change to the narrower scope of discontinued operations (ASU 2014-8) from the broader scope of discontinued operations (SFAS 144) does not affect analyst forecast dispersion.*

## **4. Sample Selection and Descriptive Statistics**

### **4.1 Sample Selection**

Our empirical analyses rely on three data sources: Compustat, CRSP and I/B/E/S. We start with all firms in Compustat between 2012 to 2016 which have year-end total asset of at least \$1 million, year-end sales of more than \$10 million, and non-zero year-end stock price. Since ASU 2014-8 became effective on December 15, 2014 for publicly traded firms, we classify 2012 and 2013 as pre-change period, and 2015 and 2016 as post-change period. We exclude 2014, the year of ASU2014-08 was issued to avoid noise due to early adopters. These steps lead to an initial sample of 22,542 observations. We then merge Compustat data with CRSP to obtain stock price data and I/B/E/S to obtain analyst forecast data. We further require firms to have non-missing accounting profitability, lagged accounting profitability, and earnings announcement returns in addition to various control variables in the regression analyses (see below).

These sample criteria result in a final sample of 9,449 observations, which are split into “treatment” observations and “control” observations. Treatment observations come from the firms who experience some underlying disposals during our sample period (i.e., the pre- and post-change periods), while control observations come from firms who likely do not have underlying disposals during our sample period. In our sample, a total of 2,512 observations are classified as treatment firm-year observations (with reported DO in any of the four years) and 6,937 as control firm-year observations (with no DO in all four years).

## 4.2 Tests of Frequency of Reporting DO (H1)

We run the following Probit model to test the prediction H1 that firms report fewer DO after ASU 2014-8:

$$Prob(DOFreq=1)_i = \alpha + \beta_1 Post + \sum \beta \text{ Controls} + \varepsilon \quad (1)$$

In this model, *DoFreq* is an indicator variable equal to one if the firm reports a non-zero DO in the year and zero otherwise. *Post* is an indicator variable equal to one if the observation is in the pre-change period, and zero if the observation is in the post-change period. We run regression model (1) for the full sample and the subsample of treatment firms only. Essentially, we compare the likelihood of reporting DO before and after the rule change for all firms and only for those firms that have underlying disposals.

## 4.3 Tests of Quality of Core Earnings (H2a & H2b)

In prediction H2a, we test whether the narrowed scope of DO following ASU 2014-8 leads to a change in the core earnings persistence. We employ the following model:

$$\begin{aligned} CoreEarn_i = & \alpha + \beta_1 CoreEarn_{i-1} + \beta_2 Post + \beta_3 Treatment + \beta_4 Post \times Treatment + \beta_5 CoreEarn_{i-1} \times Post \\ & + \beta_6 CoreEarn_{i-1} \times Treatment + \beta_7 CoreEarn_{i-1} \times Post \times Treatment + \sum \beta \text{ Controls} + \varepsilon \quad (2) \end{aligned}$$

Following prior work (McVay 2006; Barua et al. 2010), we calculate core earnings (*CoreEarn*) as sales (REVT) minus cost of goods sold (COGS) and selling, general and administrative expense (XSGA), scaled by sales (REVT).<sup>9</sup> *Treatment* is an indicator variable equal to one if the firm reports a non-zero DO in any of the four years (including both the pre- and post-change periods), and zero otherwise. By focusing on the three-way interaction term *CoreEarn<sub>i-1</sub> × Post × Treatment*, we test for differential changes in the core earnings persistence of treatment firms versus control firms following ASU 2014-8.

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<sup>9</sup> Compustat variable code for each variable is listed in parenthesis. All continuous variables are winsorized at the one- and 99-percentiles of respective distribution.

To test prediction H2b, we first employ the following model to examine whether treatment firms have a larger decrease in the earnings response coefficient than control firms following ASU 2014-8:

$$CAR = \alpha + \beta_1 Surprise_{it} + \beta_2 Post + \beta_3 Treatment + \beta_4 Surprise_{it} \times Post + \beta_5 Post \times Treatment + \beta_6 Surprise_{it} \times Treatment + \beta_7 Surprise_{it} \times Post \times Treatment + \sum \beta Controls + \varepsilon \quad (3a)$$

The earnings response coefficient is estimated by regressing the earnings announcement returns (*CAR*) on the earnings surprising (*Surprise*). Specifically, the earnings announcement return is calculated as the sized-adjusted cumulative abnormal returns during the -1 to +1 window centered on the annual earnings announcement date. The earnings surprise is calculated as I/B/E/S actual earning minus I/B/E/S actual earnings of prior year, scaled by the fiscal year-end stock price.

In this market-based test, we use I/B/E/S actual earnings to proxy for core earnings because market pays attention to analysts' forecasts who do not forecast transitory components of earnings such as DO (Chen 2010). We also focus on the random walk model to define *Surprise*, as opposed to actual earnings minus analyst expectation, because we do not want any differences in analyst expectation (i.e., H3a) to introduce noise to our test of earnings persistence. We interact *Surprise* with *Treatment* and *Post* to obtain the difference in the earnings response coefficient between treatment and control firms following ASU 2014-8.

Instead of focusing on firm-level indicator *Treatment*, we also use the absolute value of DO (*AbsDO*) to test prediction H2b in the following regression model:

$$CAR = \alpha + \beta_1 Surprise_{it} + \beta_2 Post + \beta_3 Surprise_{it} \times Post + \beta_4 AbsDO + \beta_5 Post \times AbsDO + \beta_6 Surprise_{it} \times AbsDO + \beta_7 Surprise_{it} \times AbsDO \times Post + \sum \beta Controls + \varepsilon \quad (3b)$$

We interact *Surprise* with *AbsDO*×*Post*, which allows us to assess whether the change in core earnings response coefficients is a function of the magnitude of the reported DO. Unlike *Treatment*, which is defined at the firm level, *AbsDO* allows us to assess change in earnings response coefficient at the event level. It is likely that large reported DO are indicative of more non-strategic disposals included in core earnings, so

this specification may elevate the power of the tests by exploiting large cross-sectional variation in the magnitude of DO.

#### 4.4 Tests of Analysts' Forecast Attributes (H3a & H3b)

Prediction H3a states that the narrower scope of DO under ASU 2014-8 may lead to changes in analyst forecast accuracy. We test H3a using the following difference-in-difference regression at the firm-level:

$$AbsForecastError = \alpha + \beta_1 Post + \beta_2 Treatment + \beta_3 Post \times Treatment + \sum \beta Controls + \varepsilon \quad (4a)$$

We define *AbsForecastError* as the absolute value of *ForecastError*, which is calculated as the actual I/B/E/S earnings minus the consensus earnings forecast, deflated by stock price at the fiscal year-end. The consensus earnings forecast is computed using the mean of all analyst forecasts in the 90-day interval before the announcement day. Since analysts may update their forecasts multiple times, we use the most recent forecast within the 90-day interval. Since ASU 2014-8 should only affect treatment firms that have underlying disposal activities, we interact *Post* with *Treatment* to examine the differential effect of the rule-change on the forecast error of treatment firms versus control firms.

In the following regression model (4b), we replace firm-level *Treatment* with *AbsDO*, the absolute value of DO to exploit the cross-sectional variation in the magnitude of DO:

$$AbsForecastError = \alpha + \beta_1 Post + \beta_2 AbsDO + \beta_3 Post \times AbsDO + \sum \beta Controls + \varepsilon \quad (4b)$$

We also run the following similar pair of regression models (5a) and (5b) to examine the effect of rule change on analyst forecast dispersion (*Dispersion*) under prediction H3b:

$$Dispersion = \alpha + \beta_1 Post + \beta_2 Treatment + \beta_3 Post \times Treatment + \sum \beta Controls + \varepsilon \quad (5a)$$

$$Dispersion = \alpha + \beta_1 Post + \beta_2 AbsDO + \beta_3 Post \times AbsDO + \sum \beta Controls + \varepsilon \quad (5b)$$

We calculate analyst forecast dispersion as the standard deviation of I/B/E/S analyst forecasts in the three months before the earnings announcement, deflated by the fiscal year-end stock price. Observations with fewer than three analysts during the forecast horizon are excluded.

## 5. Results

### 5.1 Descriptive Statistics

Table 1 presents the descriptive statistics for key variables in our analyses, both for the full sample and subsamples of treatment and control firms. Treatment firms are those that report non-zero DO in any of the four years during our sample period (i.e., 2012-2013 and 2015-2016). Control firms are those reporting zero DOs in all these four years. Panel A presents the descriptive statistics for the full sample of 9,449 firm-year observations. The mean and median DO reported as a percentage of sales is quite low, at 0.001, and 0.000, respectively. The mean of the absolute magnitude of DO reported as a percentage of sales is slightly higher at 0.004. The low average magnitude of DO can be attributed to the low frequency of firms reporting DO (16.1% of firm-year observations).

[Insert Table 1]

Table 1 Panel B presents the descriptive statistics for the subsamples of treatment and control firm-year observations. For treatment observations, the mean of DO as a percentage of sales is slightly higher than the full sample, at 0.004 for *DO* and 0.013 for *AbsDO*. The frequency of firms reporting DO is much higher at 60.5% of firm-years. For control observations, the magnitude and frequency of DO is by definition equal to zero. We also observe statistically significant differences between treatment and control observations. Treatment firms are slightly larger and with higher analyst following, lower R&D, and lower special items than control firms. Analyst forecast error is on average larger for treatment firms.

### 5.2 Frequency and Magnitude of Discontinued Operations

Table 2 Panel A shows the frequency and magnitudes of DO during both the pre-change period (2012-2013) and the post-change period (2015-2016). For the overall sample, the frequency of firms reporting non-zero discontinued items declined from 19.76% in the pre-change period to 12.53% in the post-change period, a difference that is both statistically and economically significant. The average magnitude of DO also decreased significantly from the pre-change period to the post-change period (0.0017 to 0.0007 for *DO*



and 0.0044 to 0.0028 for *AbsDO*). These results are attributed to the sharp decrease in the frequency of reporting DO, as the untabulated results show that the magnitude of (*DO* and *AbsDO*) is not significantly different between the pre-change period and the post-change period conditional on the observations with *DoFreq* = 1. In other words, the average magnitude of reported DO does not differ.

[Insert Table 2]

Panel B presents the frequency and magnitude of DO for the subsample of treatment observations. For this subsample, we note a much larger decline in the frequency and magnitude of DO. The frequency of firms reporting non-zero discontinued items dropped from 71.06% in the pre-change period to 49.34% in the post-change period. The magnitude of DO and absolute DO as a percentage of sales decreases from 0.0061 to 0.0028, and from 0.0158 to 0.0110, respectively. Overall, the univariate evidence is consistent with a significant decrease in the frequency following ASU 2014-8.

We further test for changes in the frequency and magnitude of discontinued items using the regression model (1) discussed earlier. We include firm-fixed effects to control for time-invariant firm characteristics. We use the full sample (in Panel C) and subsample of treatment firms (in Panel D) to run the regressions. Results in column (1) in both panels support prediction H1. The coefficients on *Post* are negative and statistically significant, consistent with firms decreasing the frequency reported DO following ASU 2014-8. Results in columns (2) and (3) in both panels also indicate that the magnitude of *DO* and *AbsDO* also decreases.

### 5.3 Test of Earnings Persistence

Tables 3 shows the regression results of the analyses on earnings persistence. Column (1) indicate a negative and statistically significant coefficient on the  $CoreEarn_{t-1} \times Post \times Treatment$  interaction term (-0.4798, t-stat 5.34), suggesting that treatment firms incur a larger decrease in earnings persistence than control firms following ASU 2014-8. This is consistent with the managerial signaling prediction in

prediction H2a that firms are less able to classify non-strategic transitory items into DO following ASU 2014-8, thereby decreasing core earnings persistence.

[Insert Table 3]

As additional analyses, we also test the persistence of pre-tax earnings (*PretaxEarn*) and special items (*SPI*). Compared with core earnings, pre-tax earnings (Compustat item PI) also includes depreciation and amortization, non-operating income, and special items. Separately examining the persistence of special items (Compustat item SPI) allows us to test whether non-strategic transitory disposals previously classified as DO could have been reclassified as special items.

Table 3 column (2) shows that the coefficient on  $PretaxEarn_{t-1} \times Post \times Treatment$  is negative and statistically significant (-0.3499, t-stat -4.46), which indicates that treatment firms experience a larger decrease in pre-tax earnings persistence than control firms following ASU 2014-8. This evidence is consistent with the finding from core earnings persistence.

Column (3) reports a statistically insignificant coefficient on  $SPI_{t-1} \times Post \times Treatment$ , which is inconsistent with differential changes in the persistence of special items for treatment versus control firms following the rule-change. Thus, it does not appear that firms classify non-strategic transitory DO into special items, which would lower the persistence of special items. In other words, DO appear in various line items in the income statement (e.g., sales, cost of goods sold, and SG&A).

Taken together, the evidence in Table 3 is consistent with the managerial signaling hypothesis that the narrowed scope of DO under ASU 2014-8 reduces management discretion to exclude transitory components from the firm's core earnings, which in turn lowers core earnings persistence.

#### 5.4 Test of Earnings Response Coefficient

We report the regression results regarding changes in earnings response coefficients in Table 4. Column (1) shows the results from estimates of equation (3a). We observe a negative and statistically significant coefficient on the  $Surprise \times Treatment \times Post$  interaction term (-0.1363, t-stat -2.24), which is

consistent with treatment firms incurring a larger drop in the earnings response coefficient than control firms following ASU 2014-8. This larger drop is consistent with the lowered persistence of core earnings for treatment firms.

[Insert Table 4]

Similarly, in Column (2), we find a negative and statistically significant coefficient on the *Surprise*  $\times$  *AbsDO*  $\times$  *Post* interaction term (-2.1078, t-stat -3.09), which indicates that firms with greater DO have larger decrease in the earnings response coefficient following ASU 2014-8. This result appears slightly stronger after adding firm fixed effects (Column (3), -3.8428, t-stat 3.77).<sup>10</sup> Overall, we find strong support for the prediction that the narrowing of the scope of DO under ASU 2014-8 leads to a decrease in the earnings response coefficient.

#### 5.4 Test of Analysts' Forecast Error and Dispersion

Prediction H3a focuses on the effect of narrower scope of DO under ASU 2014-8 on analyst forecast error. Table 5 Panel A provides the difference-in-difference regression results of absolute forecast error. Although columns (1) and (2) show positive but statistically insignificant coefficient on *Post*  $\times$  *Treatment* and on *Post*  $\times$  *AbsDO*, column (3) shows a positive and statistically significant coefficient on *Post*  $\times$  *AbsDO* (0.2406, t-stat 2.63) after controlling for firm-fixed effects.

[Insert Table 5]

We include controls for firm size (*Size*), the number of analysts covering the stock (*LnAnalyst*), loss firms (*Loss*), and the level of R&D expenditure (*R&D*), factors which have been shown in the prior literature to affect forecast accuracy. The definitions to these variables are provided in the appendix. Size of a firm is a well-documented determinant of forecast accuracy, with larger firms having more accurate forecasts (Brown 1998). The number of analysts following a firm has been shown in several studies to be positively

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<sup>10</sup> Since *AbsDO* is zero for control observations by definition, our regression results are qualitatively similar after we exclude those observations.

associated with analyst forecast accuracy (Clement 1999; Alford and Berger 1999). Loss firms and the level of R&D expenditure has been shown to be negatively associated with analyst forecast accuracy (e.g., Brown 1998; Hwang, Jan, and Basu 1996; Barron, Byard, Kile, Riedl 2002; Gu and Wang 2005).

The statistically significant coefficient on  $Post \times AbsDO$  indicates that, following ASU 2014-8, analysts have more difficulty in forecasting core earnings when firms have larger DO. This evidence is consistent with the hypothesis that the narrower scope of DO has limited managerial signaling through DO classification. The difference in the results from columns (2) and (3) further indicates that analysts are more uncertain about the nature of large DO occurs in a given year (i.e., whether they are strategic shifts), as opposed to general firm-level disposals.

Prediction H3b focuses on the effect of narrower scope of DO under ASU 2014-8 on analyst forecast dispersion. Table 5 Panel B indicate shows the difference-in-difference regression results of analyst forecast dispersion. Column (1) presents the results from estimates of equation (5a) while Column (2) and (3) presents the results from estimates of equation (5b). Similar to the results we observe in Panel A, the coefficient on  $Post \times Treatment$  is positive but statistically insignificant, due to the inability of the *Treatment* indicator variable to capture large cross-sectional variations in the magnitude of DO. In contrast, the coefficient on  $Post \times AbsDO$  is positive and statistically significant after controlling for firm fixed effects (0.1941, t-stat 2.78) in column (3). Overall, the results in Table 3 are consistent with the narrower scope of DO under ASU 2014-8 leading to both higher analyst forecast error and dispersion.

As an additional analysis, we examine whether the increase in forecast error documented in Tables 5 Panel A is one-sided (i.e., driven by high optimism or pessimism). Because managers are less able to hide negative transitory disposals in DO after ASU 2014-8, we expect that more negative transitory items are included in core earnings after the rule change, which potentially makes analysts' forecasts appear too optimistic if analysts underestimate their impact on core earnings.

Table 5 Panel C shows the difference-in-difference regressions of signed forecast error (which is defined as actual I/B/E/S earnings minus analyst consensus forecast). We find significantly negative coefficients on  $Post \times AbsDO$ , reported in columns (2) and (3). These results are consistent with the

explanation that analysts under-estimate the impact of large DO on core earnings, potentially due to the uncertainty about managers' classification of these large negative DO as well as the uncertainty about other concurrent negative non-strategic transitory disposals included in the core earnings.

## **6. Summary and Conclusion**

In the past decades, the U.S. accounting standards have gradually shifted many below-the-line items in income statement into above-the-line. A recent important change is the pronouncement and implementation of ASU 2014-8, which intends to narrow the scope of disposals reported as DO. The scope of DO is a controversial issue and has triggered several major changes in U.S. GAAP. In 2014, FASB released ASU 2014-8 to replace SFAS 144, which requires a DO to represent a "strategic shift that has (or will have) a major effect on an entity's operations and financial results.", which is widely believed to be more in line with the scope of DO in APB 30 and IFRS 5 that requires a DO to represent a business segment. This study examines the effect of change in the scopes of DO following ASU 2014-8 on reporting frequency and magnitude of DO, earnings quality as measured by persistence and earnings response coefficient, and analysts' attributes, measured by forecast error and dispersion.

Using data during 2013-2016 and the difference-in-difference methodology, we find that the frequency of reporting DO significantly reduces following ASU 2014-8, which is consistent with our prediction that new regulation uses a narrower scope of discontinued operations. We also find that the regulation change also significantly reduces core earnings persistence and earnings response coefficient. This is an important finding because reported core earnings appear to be less persistent and less relevant to share return following ASU 2014-8. This is consistent with the notion that the narrowed scope of DO has limited managerial ability to signal permanent component of earnings to financial statement users by mixing up continuing and discontinued income. Finally, we find that the regulation change significantly increases forecast error and dispersion. This finding is consistent with the notion that unreported dispositions of component operations make it more difficult for analysts to forecast future earnings. Thus, ASU 2014-8 may have increased the information asymmetry and uncertainty between managers and financial analysts. We believe that the

findings of this study should be of interest to accounting regulators, corporate managers, and financial statement users when they determine or interpret the scope of DO.

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**Appendix**  
**Variable Definitions**

<i>DO</i>	discontinued operations of year t scaled by sales of year t
<i>AbsDO</i>	the absolute magnitude of <i>DO</i>
<i>DOFreq</i>	equal to 1 if the firm reports a non-zero DO in year t, and zero otherwise
<i>Treatment</i>	equal to one if the firm reports a non-zero DO in any of the four years during our sample period (i.e., 2012, 2013, 2015 and 2016), and zero otherwise
<i>Post</i>	equal to one for observations in the post-period (2015- 2016), and zero for observations in the pre-period (2012 – 2013)
<i>CoreEarn</i>	calculated as [Sales- Cost of Goods Sold (COGS) - Selling, General, and Administrative Expenses (XSGA)], scaled by sales in year t
<i>PretaxEarn</i>	pre-tax income scaled by sales of year t
<i>SPI</i>	special items scaled by sales of year t
<i>CAR</i>	size-adjusted cumulative abnormal returns in the -1 to +1 window around the announcement of year t earnings
<i>ForecastError</i>	the actual I/B/E/S earnings minus the mean consensus earnings forecast in the 90 days before the announcement of year t earnings, deflated by stock price at the fiscal end of year t
<i>AbsForecastError</i>	the absolute value of <i>Forecast Error</i>
<i>Dispersion</i>	the standard deviation in I/B/E/S analyst forecasts in the three month before the announcement of year t earnings, deflated by stock price at the fiscal end of year t
<i>Surprise</i>	the actual I/B/E/S earnings of the current year minus the actual I/B/E/S earnings of the prior year, deflated by stock price at the fiscal end of year t
<i>Size</i>	the natural log of the firm's assets at the fiscal end of year t
<i>LnAnalyst</i>	the natural log of the number of analysts in the month before the announcement of year t earnings
<i>Loss</i>	equals one if the firm reported loss in year t, and zero otherwise
<i>R&amp;D</i>	the research and development expense in year t scaled by sales in year t

Missing values in the databases for *DO*, *R&D*, *SPI*, *LnAnalyst*, *COGS*, *XSGA* are set equal to 0.

**Table 1**  
**Descriptive Statistics**

This table presents descriptive statistics for key variables in the empirical analyses. Treatment firms are those that report a non-zero discontinued items (*DO*) in any of the four years during our sample period (i.e., 2012-2013 and 2015-2016). Control firms are those reporting zero *DO* in all of these four years. In Panel B, \*\*\*, \*\*, and \* indicate significant difference from the mean of control firm at the 1%, 5%, and 10% respectively.

***Panel A Distribution of Key Variables (n = 9,449)***

Variable	Mean	Std. Dev.	25th	Median	75th
DO	0.001	0.012	0.000	0.000	0.000
AbsDO	0.004	0.017	0.000	0.000	0.000
DOFreq	0.161	0.368	0.000	0.000	0.000
ForecastError	0.000	0.026	-0.001	0.000	0.003
AbsForecast Error	0.012	0.037	0.001	0.003	0.008
Dispersion	0.008	0.025	0.001	0.001	0.005
Size	7.837	1.808	6.625	7.815	8.977
LnAnalyst	2.311	0.981	1.693	2.386	3.079
Loss	0.221	0.415	0.000	0.000	0.000
R&D	0.054	0.165	0.000	0.000	0.024
CoreEarn	0.178	0.359	0.090	0.178	0.334
PretaxEarn	0.034	0.419	0.015	0.088	0.187
SPI	-0.018	0.057	-0.018	-0.003	0.000
Surprise	-0.007	0.088	-0.011	0.003	0.012
CAR	0.002	0.074	-0.033	0.002	0.038

***Panel B Mean and Standard Deviation for Treatment and Control Firms***

Variable	Treatment Firms (n = 2,512 )		Control Firms (n = 6,937)	
	Mean	Std. Dev.	Mean	Std. Dev.
DO	0.004***	0.023	0.000	0.000
AbsDO	0.013***	0.031	0.000	0.000
DOFreq	0.605***	0.489	0.000	0.000
ForecastError	-0.001***	0.028	0.000	0.026
AbsForecastError	0.014***	0.041	0.012	0.036
Dispersion	0.009	0.026	0.008	0.024
Size	8.286***	1.718	7.674	1.812
LnAnalyst	2.393***	0.985	2.281	0.977
Loss	0.229*	0.420	0.218	0.413
R&D	0.026***	0.079	0.064	0.018
CoreEarn	0.175	0.269	0.179	0.386
PretaxEarn	0.036	0.330	0.033	0.447
SPI	-0.022***	0.063	-0.017	0.055
Surprise	-0.008	0.091	-0.006	0.087
CAR	0.003	0.070	0.002	0.076

**Table 2**  
**Frequency and Magnitude of Discontinued Operations**

This table compares the frequency and magnitude of discontinued operations during the pre-change period (2012-2013) and the post-change period (2015-2016). Treatment firms are those that report a non-zero discontinued operations (*DO*) in any of the four years during our sample period (i.e., 2012-2013 and 2015-2016). Control firms are those report zero *DO* in all of these four years. Robust standard errors clustered by firm are reported in parentheses. All variables are defined in the Appendix.

***Panel A Frequency and Magnitude during Pre- and Post-Change Periods***

	Pre	Post	Post – Pre
DOFreq	0.1976	0.1253	-0.0723*** (-9.60)
DO	0.0017	0.0007	-0.0010*** (-3.97)
Abs(DO)	0.0044	0.0028	-0.0016*** (-4.50)

***Panel B Frequency and Magnitude during Pre- and Post-Change Periods for Treatment Firms***

	Pre	Post	Post – Pre
DOFreq	0.7106	0.4934	-0.2172*** (-11.41)
DO	0.0061	0.0028	-0.0033*** (-3.59)
Abs(DO)	0.0158	0.0110	-0.0048*** (-3.82)

***Panel C Regressions of Frequency and Magnitude***

	(1)	(2)	(3)
	DOFreq	DO	AbsDO
Post	-0.0655*** (-8.42)	-0.0011*** (-3.41)	-0.0012*** (-2.79)
FE (Firm)	Yes	Yes	Yes
Observations	9,449	9,449	9,449
R-squared	0.669	0.408	0.435

***Panel D Regressions of Frequency and Magnitude for Treatment Firms***

	(1)	(2)	(3)
	DOFreq	DO	AbsDO
Post	-0.2216*** (-8.79)	-0.0036*** (-3.43)	-0.0041*** (-2.80)
FE (Firm)	Yes	Yes	Yes
Observations	2,512	2,512	2,512
R-squared	0.357	0.398	0.366

**Table 3**  
**Difference-in-Difference Regressions Regarding Earnings Persistence**

This table shows difference-in-difference (DID) regressions of measures of earnings components, including core earnings (*CoreEarn<sub>t</sub>*) pre-tax earnings (*PretaxEarn<sub>t</sub>*), and special items (*SPI<sub>t</sub>*). Treatment firms are those that report a non-zero discontinued items (*DO*) in any of the four years during our sample period (i.e., 2012-2013 and 2015-2016). Pre-change period includes 2012 – 2013 and post-change period includes 2015 – 2016. Robust standard errors clustered by firm are reported in parentheses. **Bold row** indicates DID hypothesis testing. All variables are defined in the Appendix.

	(1)	(2)	(3)
	<i>CoreEarn<sub>t</sub></i>	<i>PretaxEarn<sub>t</sub></i>	<i>SPI<sub>t</sub></i>
CoreEarn <sub>t-1</sub>	0.6563*** (16.78)		
PretaxEarn <sub>t-1</sub>		0.5695*** (13.46)	
SPI <sub>t-1</sub>			0.2243*** (5.63)
Post	-0.0030 (-0.25)	-0.0369*** (-4.30)	-0.0029** (-2.13)
Treatment	-0.0547*** (-4.46)	-0.0253*** (-2.99)	-0.0054*** (-2.80)
Post x Treatment	0.0896*** (5.26)	0.0316** (2.44)	0.0003 (0.09)
CoreEarn <sub>t-1</sub> x Post	-0.0467 (-0.99)		
PretaxEarn <sub>t-1</sub> x Post		0.0128 (0.25)	
SPI <sub>t-1</sub> x Post			0.0484 (0.88)
CoreEarn <sub>t-1</sub> x Treatment	0.2376*** (4.64)		
PretaxEarn <sub>t-1</sub> x Treatment		0.2281*** (3.76)	
SPI <sub>t-1</sub> x Treatment			-0.0552 (-0.72)
<b>CoreEarn<sub>t-1</sub> x Post x Treatment</b>	<b>-0.4798***</b> <b>(-5.34)</b>		
<b>PretaxEarn<sub>t-1</sub> x Post x Treatment</b>		<b>-0.3499***</b> <b>(-4.46)</b>	
<b>SPI<sub>t-1</sub> x Post x Treatment</b>			<b>0.0074</b> <b>(0.07)</b>
Constant	0.0723*** (7.62)	0.0322*** (5.15)	-0.0116*** (-13.54)
Observations	9,449	9,449	9,449
R-squared	0.486	0.392	0.050

**Table 4**  
**Difference-in-Difference Regressions Regarding Earnings Response Coefficients**

This table shows difference-in-difference (DID) regressions of earnings announcement returns (CAR), which is defined as size-adjusted cumulative abnormal returns in the -1 to +1 window around the announcement of year  $t$  earnings. Treatment firms are those that report a non-zero discontinued items ( $DO$ ) in any of the four years during our sample period (i.e., 2012-2013 and 2015-2016). Pre-change period includes 2012 – 2013 and post-change period includes 2015 – 2016. Robust standard errors clustered by firm are reported in parentheses. **Bold row** indicates DID hypothesis testing. All variables are defined in the Appendix.

	(1)	(2)	(3)
Surprise	0.0065 (0.29)	0.0369* (1.80)	0.0139 (0.53)
Post	0.0031* (1.76)	0.0029* (1.86)	0.0017 (1.02)
Surprise x Post	0.0277 (0.89)	0.0031 (0.11)	0.0005 (0.01)
Treatment	0.0016 (0.74)		
Post x Treatment	-0.0007 (-0.20)		
Surprise x Treatment	0.1287*** (3.23)		
<b>Surprise x Treatment x Post</b>	<b>-0.1363**</b> <b>(-2.24)</b>		
Abs(DO)		-0.0091 (-0.24)	-0.0303 (-0.39)
Abs(DO) x Post		0.0540 (0.72)	0.0526 (0.48)
Surprise x Abs(DO)		0.9317** (2.17)	2.9289*** (3.52)
<b>Surprise x Abs(DO) x Post</b>		<b>-2.1078***</b> <b>(-3.09)</b>	<b>-3.8428***</b> <b>(-3.77)</b>
Constant	0.0005 (0.42)	0.0009 (0.83)	
FE (Firm)	No	No	Yes
Observations	9,449	9,449	9,449
R-squared	0.004	0.003	0.339

Table 5

**Difference-In-Difference Regressions of Properties of Analysts' Forecasts**

This table shows difference-in-difference (DID) regressions of absolute analyst forecast error (*AbsForecastError*), forecast dispersion (*Dispersion*), and signed analyst forecast error (*ForecastError*). Treatment firms are those that report a non-zero discontinued items (*DO*) in any of the four years during our sample period (i.e., 2012-2013 and 2015- 2016). Pre-change period includes 2012 – 2013 and post-change period includes 2015 – 2016. Robust standard errors clustered by firm are reported in parentheses. **Bold row** indicates DID hypothesis testing. All variables are defined in the Appendix.

**Panel A Regressions of Absolute Forecast Error**

	(1)	(2)	(3)
Post	0.0018** (2.12)	0.0022*** (2.96)	0.0047*** (4.37)
Treatment	0.0005 (0.51)		
<b>Post x Treatment</b>	<b>0.0030</b> <b>(1.54)</b>		
abs(DO)		0.0567* (1.76)	-0.0606 (-1.27)
<b>Post x abs(DO)</b>		<b>0.1472</b> <b>(1.64)</b>	<b>0.2406***</b> <b>(2.63)</b>
Size	-0.0006** (-2.00)	-0.0005* (-1.88)	-0.0103*** (-4.70)
LnAnalyst	-0.0019*** (-4.09)	-0.0019*** (-4.06)	-0.0003 (-0.37)
Loss	0.0314*** (17.06)	0.0309*** (16.95)	0.0231*** (10.46)
R&D	-0.0177*** (-4.37)	-0.0177*** (-4.39)	-0.0242 (-1.63)
	0.0141*** (7.51)	0.0138*** (7.38)	
FE (Firm)	No	No	Yes
Observations	9,449	9,449	9,449
R-squared	0.125	0.129	0.545

**Panel B Regressions of Forecast Dispersion**

	(1)	(2)	(3)
Post	0.0014** (2.11)	0.0017*** (3.04)	0.0029*** (3.77)
Treatment	0.0001 (0.13)		
<b>Post x Treatment</b>	<b>0.0012</b> <b>(0.91)</b>		
abs(DO)		0.0697** (2.10)	-0.0438 (-1.17)
<b>Post x abs(DO)</b>		<b>0.0392</b> <b>(0.58)</b>	<b>0.1941***</b> <b>(2.78)</b>
Size	-0.0003	-0.0003	-0.0051***

	(-1.18)	(-1.26)	(-2.93)
LnAnalyst	0.0004	0.0005	0.0004
	(0.94)	(1.09)	(0.62)
Loss	0.0210***	0.0206***	0.0140***
	(14.63)	(14.45)	(8.71)
R&D	-0.0106***	-0.0105***	0.0091
	(-3.03)	(-3.00)	(1.21)
FE (Firm)	No	No	Yes
Observations	7,298	7,298	7,298
R-squared	0.112	0.116	0.563

***Panel C Regressions of Signed Forecast Error***

	(1)	(2)	(3)
Post	0.0003	0.0004	0.0015**
	(0.47)	(0.77)	(2.06)
Treatment	-0.0009		
	(-1.17)		
<b>Post x Treatment</b>	<b>-0.0011</b>		
	<b>(-0.88)</b>		
abs(DO)		0.0400	0.0670**
		(1.52)	(2.02)
<b>Post x abs(DO)</b>		<b>-0.1027**</b>	<b>-0.1263**</b>
		<b>(-2.06)</b>	<b>(-2.25)</b>
Size	-0.0004*	-0.0004**	-0.0035**
	(-1.77)	(-2.12)	(-2.37)
LnAnalyst	0.0013***	0.0013***	0.0011**
	(3.88)	(3.99)	(2.00)
Loss	-0.0042***	-0.0043***	-0.0042***
	(-3.18)	(-3.23)	(-2.61)
R&D	0.0022	0.0025	0.0053
	(0.76)	(0.86)	(0.50)
Constant	0.0009	0.0009	
	(0.67)	(0.67)	
FE (Firm)	No	No	Yes
Observations	9,449	9,449	9,449
R-squared	0.006	0.007	0.402